APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/784,944	02/25/2004	Zhitai Sun	1341.1190	9464

21171   7590   12/21/2011
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EXAMINER
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ART UNIT	PAPER NUMBER
2195	

MAIL DATE	DELIVERY MODE
12/21/2011	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
Office Action Summary	10/784,944	SUN ET AL.
	Examiner	Art Unit	
	CAROLINE H. ARCOS	2195	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>26 September 2011</u>.

2a) ☒ This action is **FINAL**.   2b) ☐ This action is non-final.

3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____ ; the restriction requirement and election have been incorporated into this action.

4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

5) ☒ Claim(s) <u>1-4, 6, 8-11 and 15</u> is/are pending in the application.

    5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☒ Claim(s) <u>1-4,6,8-11 and 15</u> is/are rejected.

8) ☐ Claim(s) _____ is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

10) ☐ The specification is objected to by the Examiner.

11) ☒ The drawing(s) filed on <u>25 February 2004</u> is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☒ All   b) ☐ Some * c) ☐ None of:

        1. ☒ Certified copies of the priority documents have been received.

        2. ☐ Certified copies of the priority documents have been received in Application No. _____.

        3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1. This communication is responsive to Amendment filed 05/07/2010.

2. Claims 1-4, 6, 8-11 and 15 are pending for examination. Claims 1, 9, 10, and 15 are

   independent claims. Claims 12-14 cancelled.

3. This action is FINAL.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

   The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the
   subject matter which the applicant regards as his invention.

5. Claims 1-4, 6, 8, 10-11 and 15 are rejected under 35 U.S.C. 112, second paragraph, as

   being indefinite for failing to particularly point out and distinctly claim the subject matter

   which applicant regards as the invention.

   a. The following terms lacks antecedent basis:

      i.   The task and the real-time operating system – claim 1.

      ii. The operating system- claim 15.

   b. The claim language in the following claims is not clearly understood:

      i.   As per claim 1, lines 18, it is unclear what is "the task" referring to. (i.e.

      the non-idle process or another operating system that will execute the general

      purpose operating system or the general purpose operating system). For purpose

      of examination, the examiner interprets that the task is the general purpose

      operating system.

      ii.   As per claim 10, lines 12, it is unclear which priority is stored in the storage unit (i.e. the higher priority or the primary priority. For purpose of examination, the examiner interprets that the higher priority is stored in a storage unit.

      iii.   As per claim 15, line 3, it is unclear what is the relation or the difference between a task and a process of an operation system. For purpose of examination, the examiner interprets that the task and the process as the same. It is unclear whether there are single or multiple operating systems because the recite "the priority of the operation system" For purpose of examination, the examiner interprets the limitation have having multiple operating/operation system. Line 5, it is unclear which component/entity does "the identification information "associated with (the task or operation system). it is unclear whether "the operating system" is the same as "the operation system" (i.e. if it is the same it should be referred to as one name"). Line 9, it is unclear whether "the priority" is the operation system priority or one of the task or process priority. It is unclear what is meant by "non-idle processing" (i.e. the task or the process is not stalled?).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
manner in which the invention was made.

7. Claims 1-4, 6 and 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Saito et al. (US 2005/0149933 A1), in view of Funaki et al. (US 2004/0098722 A1), in

view of Larson et al. (US 4,646,287) and further in view of Kubo (US 5,241,676).

8. As per claim 1, Saito teaches the invention substantially as claimed including a computer-

readable recording medium that stores a task control computer program including

computer executable instructions which when executed by a computer to execute an

operation comprising:

determining whether a non-idle process is included in processes to be executed

under control of a General-purpose operating system that process is included in processes

to be executed under control of the General-purpose operating system, wherein the non-

idle process being a process waiting for execution under control of the operating system,

other than an idle process executed when the operating system proceeds to an idle state

(par. [0070]; par. [0071]; par. [0094]; par. [0095]; par. [0096]; par. [0098]; Fig. 5,

110,112,113,114).

9. Saito does not explicitly teach causing the computer to execute a General-purpose

operating system as a task by performing:

determining that the process is a non-idle process based on a process identifier

that indicate whether process is the non-idle process or not and is stored in a process

control block (PCB) of processes to be executed.

changing a priority of the task to a higher by reading the higher priority stored in a storage unit as a system parameter and setting the priority of the task to the higher priority when it is determined at the determining that the executable processes to be executed under control of General-purpose operating system include the non-idle process, The higher priority being set higher than a primary priority of the task to execute the General purpose operating system under the control of which the non-idle process is executed, The task being executed under control of a real-time operating system.

10. However, Funaki teaches causing the computer to execute a General-purpose operating system as a task by performing (par. [0030]; wherein the real-time OS (first OS) manages and schedules the non-real-time OS (second OS) is executing the GPOS as a task):

changing a priority of the task to a higher priority and setting the priority of the task to the higher priority when it is determined at the determining that the executable processes to be executed under control of General-purpose operating system include the non-idle process, The higher priority being set higher than a primary priority of the task to execute the General purpose operating system under the control of which the non-idle process is executed(par. [0019-0021]; par. [0030]; par. [0044]; par. [0048-0049]; par. [0086]), the task being executed under control of a real-time operating system (par. [0030]).

11. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Saito and Funaki because Funaki teaching of

raising the priority of the task allow the general purpose operating system to be allocated time to execute its non-idle tasks.

12. The combined teaching of Saito and Funaki does not explicitly teach that determining that the process is a non-idle process based on a process identifier that indicate whether process is the non-idle process or not and changing a priority of the task to a higher priority by reading the higher priority stored in a storage unit as a system parameter.

13. However, Larson teaches determining that the process is a non-idle process based on a process identifier that indicates whether process is the non-idle process or not (abs.).

14. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Saito, Funaki and Larson because one would be motivated to use Larson teaching of determining the non-idle process based on their ID for faster and easier identification of the threads that need to be scheduled and more efficient way of managing the system.

15. The combined teaching of Saito, Funaki and Larson does not explicitly teach that changing a priority of the task to a higher priority by reading the higher priority stored in a storage unit as a system parameter.

16. However, Kubo teaches PCB comprising a process control information, and changing a
    priority of the task to a higher priority by reading the higher priority stored in a storage
    unit as a system parameter (col. 2, lines 35-45; col. 3, lines 45-55; fig. 1, element 4 and
    fig. 2, elements 7 & 8).

17. It would be obvious to one of ordinary skill in the art at the time the invention was made
    to combine the teaching of Saito, Funaki, Larson and Kubo because Kubo teaching of
    setting the process priority as semaphore priority stored in the system would improve
    system performance and control process priority.

18. The combine teaching of Saito, Funaki, Larson and Kubo does not explicitly state that
    the process ID is stored in the PCB. However, it is well known that PCB contains all the
    process information including its ID.

19. As per claim 2, Saito teaches wherein a system call that executes the determining is a
    system call is implemented (Fig. 7, 184; par. [0089]; par. [0141], lines 1-6).

20. Saito does not explicitly teach that the changing is a system call. However, Funaki
    teaches the changing is a system call (par. [0030]; par. [0044]; wherein the real-time OS
    is the managing and scheduling general purpose OS by changing its priority to be able to
    execute, hence, the changing is a system call).

21. As per claim 3, Funaki teaches changing the priority of the task to the primary lower than
    the higher priority by reading the primary priority stored in the storage unit as a system
    parameter and setting the priority of the task to the primary priority after the General
    purpose operating system has been executed at the higher priority (par. [0019-0021]; par.
    [0030]; par. [0044-0045]; par. [0048-0049]; par. [0086]).

22. The combined teaching of Saito and Funaki doesn't not explicitly teach the operating
    system has been executed at the higher priority for a predetermined period of time.

23. However, it would have been obvious from the combined teaching of Saito and Funaki
    and especially Saito background of invention of allocating time slice for each virtual
    machine to incorporate this teaching with changing operating system priority to have a
    fair share of the CPU time (par. [0003]).

24. As per claim 4, Saito teaches the determining comprises:

    determining whether a schedule request for one of the processes to be executed
    under control of the operating system has been made to the operating system (Fig. 1; fig.
    9; Par. [0070]); and

    determining whether an interruption request has been made to the operating
    system based on an interruption request flag set when an interruption to the operating
    system is required (fig. 6, 174; fig. 12, elements 241,242; par. [0105], lines 14-19).

25. As per claim 6, Saito teach the determining whether the schedule request has been made to the General- Purpose operating system is based on a schedule request flag stored in a process control block of the one of the processes to be executed under control of the operating system (par. [0070]).

26. As per claim 8, Funaki teaches the primary priority of the task is changed to the higher priority after it is determined at the determining that the non- idle process waiting for the execution is included in the process to be executed under control of the General-purpose operating system par. [0019-0021]; par. [0030]; par. [0044]; par. [0048-0049]; par. [0086]).

27. Saito doesn't explicitly teach that a priority change when a predetermined period of time has elapsed. However, it would have been obvious from Saito background of invention of allocating time slice for each virtual machine to incorporate this teaching with changing operating system priority to have a fair share of the CPU time (par. [0003]).

28. As per claim 9, Saito teaches a task control apparatus comprising:

    a storage device storing computer-readable instructions, execution of the instructions by the task control apparatus facilitates execution of the instructions configuring the task control apparatus to include; a determining unit that determines whether the process is the non-idle process or not and the non-idle process is executable under control of the General-purpose operating system ,wherein the non-idle process is a

process waiting for execution as the task under control of the General-purpose operating system, other than an idle process executed when the General-purpose operating system proceeds to an idle state (fig. 2, 101; par. [0070]; par. [0071]; par. [0094]; par. [0095]; par. [0096]; par. [0098]; Fig. 5, 114).

29. Saito does not explicitly teach that causing a computer to execute a General-purpose operating system as a task under control of a real-time operating system, the process identifier stored in a process control block (PCB) indicates whether a process is the non-idle process or not and a changing unit that changes a priority of the task to a higher priority stored in a storage unit as a system parameter and setting the priority of the task to the higher priority when it is determined that the processes to be executed under the control of general purpose operating system include the non-idle process , the higher priority being set higher than a primary priority of the task to execute the General purpose operating system under control of which the non-idle process is executed, the task being executed under control of the real-time operating system.

30. However, Funaki teaches causing a computer to execute a General-purpose operating system as a task under control of a real-time operating system (par. [0030]; wherein the real-time OS (first OS) manages and schedules the non-real-time OS (second OS) is executing the GPOS as a task as claimed), and a changing unit that changes a priority setting the priority of the task to the higher priority when it is determined that the processes to be executed under the control of general purpose operating system include

the non-idle process, the higher priority being set higher than a primary priority of the

task to execute the General purpose operating system under control of which the non-idle

process is executed(par. [0019-0021]; par. [0030]; par. [0044]; par. [0048-0049]; par.

[0086]), the task being executed under control of a real-time operating system (par.

[0030]).

31. It would have been obvious to one of ordinary skill in the art at the time the invention

was made to combine the teaching of Saito and Funaki because Funaki teaching of

raising the priority of the task allow the general purpose operating system to be allocated

time to execute its non-idle tasks.

32. The combined teaching of Saito and Funaki does not explicitly teach the process

identifier stored in a process control block (PCB) indicates whether a process is the non-

idle process or not and a changing unit that changes a priority of the task to a higher

priority stored in a storage unit as a system parameter.

33. However, Larson teaches determining that the process is a non-idle process based on a

process identifier that indicates whether process is the non-idle process or not (abs.).

34. It would have been obvious to one of ordinary skill in the art at the time the invention

was made to combine the teaching of Saito, Funaki and Larson because one would be

motivated to use Larson teaching of determining the non-idle process based on their ID

for faster and easier identification of the threads that need to be scheduled and more
efficient way of managing the system.

35. The combined teaching of Saito, Funaki and Larson does not explicitly teach that
changing a priority of the task to a higher priority by reading the higher priority stored in
a storage unit as a system parameter.

36. However, Kubo teaches PCB comprising a process control information, and changing a
priority of the task to a higher priority by reading the higher priority stored in a storage
unit as a system parameter (col. 2, lines 35-45; col. 3, lines 45-55; fig. 1, element 4 and
fig. 2, elements 7 & 8).

37. It would be obvious to one of ordinary skill in the art at the time the invention was made
to combine the teaching of Saito, Funaki, Larson and Kubo because Kubo teaching of
setting the process priority as semaphore priority stored in the system to improve system
performance and control process priority.

38. The combine teaching of Saito, Funaki, Larson and Kubo does not explicitly state that
the process ID is stored in the PCB. However, it is well known that PCB contains all the
process information including its ID.

39. As per claim 10, it is the task control method of the medium claim 9. Therefore, it is

    rejected under the same rational.

40. As per claim 11, Funaki teaches changing the priority of the task to the primary priority

    lower than the higher priority by reading the primary priority stored in the storage unit as

    a system parameter and setting the priority of the task to the primary priority after the

    operating system has been executed at the higher priority (par. [0019-0021]; par. [0030];

    par. [0044-0045]; par. [0048-0049]; par. [0086]).

41. The combined teaching of Saito, Funaki, Larson and Kubo doesn't explicitly teach

    operating system execution for a predetermined period of time. However, it would have

    been obvious from Saito background of invention of allocating time slice for each virtual

    machine to incorporate this teaching with changing operating system priority to have a

    fair share of the CPU time (par. [0003]).

42. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Saito et al. (US

    2005/0149933 A1), in view of Curl Franklin, "how operating system works"

    howstuffworks, 04/04/2003, pages 1-3) and further in view of Funaki et al. (US

    2004/0098722 A1).

43. As per claim 15, Saito teaches a non-transitory computer-readable medium storing a

    control program that causes a computer to execute a procedure, the procedure

comprising:

      controlling execution of a task and a process of an operation system based on a

priority of the operation system (fig. 2, 101; par. [0070]; par. [0071]; par. [0094]; par.

[0095]; par. [0096]; par. [0098]; Fig. 5, 114).

44. Saito does not explicitly teach obtaining identification information, which is stored in a

    storage area controlled by the operating system, of a processing controlled by the

    operation system based on address information of the storage area, the address

    information being included in control information used in the controlling; and

       changing a first value of the priority to a second value of the priority when the

    identification information indicates non-idle processing, wherein the second value is

    higher than the first value.

45. However, Curl teaches obtaining identification information, which is stored in a storage

    area controlled by the operating system, of a processing controlled by the operation

    system based on address information of the storage area, the address information being

    included in control information used in the controlling, identification information

    indicates non-idle processing (pg.1, lines 1-15; pg.2, lines 12-21; wherein the priority of

    a process is an indication that the process is non-idle process).

46. It would have been obvious to one of ordinary skill in the art at the time the invention

    was made to combine the teaching of Saito and Curl because Curl teaching of PCB is

well known to one of ordinary skill in the art that this is the technique and information

used by the operating system to schedule the tasks.

47. The combined teaching of Saito and Curl does not explicitly teach changing a first value

of the priority to a second value of the priority when the identification information

indicates non-idle processing, wherein the second value is higher than the first value.

48. However, Funaki teaches changing a first value of the priority to a second value of the

priority, wherein the second value is higher than the first value (par. [0019-0021]; par.

[0030]; par. [0044]; par. [0048-0049]; par. [0086]).

49. It would have been obvious to one of ordinary skill in the art at the time the invention

was made to combine the teaching of Saito, Curl and Funaki because Funaki teaching of

raising the priority of the task improve system performance by controlling the priority of

the task/process.

Response to Arguments

50. Applicant's arguments filed on 09/26/2011 with respect to claims 1-4, 6, and 8-11 have

been considered but are moot in view of the new ground(s) of rejection.

Conclusion

51. The prior art made of record and not relied upon is considered pertinent to applicant's

    disclosure.

52. Applicant's amendment necessitated the new ground(s) of rejection presented in this

    Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

    § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37

    CFR 1.136(a).

53. A shortened statutory period for reply to this final action is set to expire THREE

    MONTHS from the mailing date of this action. In the event a first reply is filed within

    TWO MONTHS of the mailing date of this final action and the advisory action is not

    mailed until after the end of the THREE-MONTH shortened statutory period, then the

    shortened statutory period will expire on the date the advisory action is mailed, and any

    extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the

    advisory action. In no event, however, will the statutory period for reply expire later than

    SIX MONTHS from the date of this final action.

54. Any inquiry concerning this communication or earlier communications from the

    examiner should be directed to CAROLINE ARCOS whose telephone number is

    (571)270-3151. The examiner can normally be reached on Monday-Thursday 8:00 AM

    to 2:00 PM.

55. If attempts to reach the examiner by telephone are unsuccessful, the examiner's
    supervisor, Meng-Ai An can be reached on 571-272-3756. The fax phone number for the
    organization where this application or proceeding is assigned is 571-273-8300.

56. Information regarding the status of an application may be obtained from the Patent
    Application Information Retrieval (PAIR) system. Status information for published
    applications may be obtained from either Private PAIR or Public PAIR. Status
    information for unpublished applications is available through Private PAIR only. For
    more information about the PAIR system, see http://pair-direct.uspto.gov. Should you
    have questions on access to the Private PAIR system, contact the Electronic Business
    Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO
    Customer Service Representative or access to the automated information system, call
    800-786-9199 (IN USA OR CANADA) or 571-272-1000.

                                                        /CAROLINE H ARCOS/

                                                        Examiner, Art Unit 2195

                                                /Jennifer N. To /
                                                Primary Examiner, Art Unit 2195